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STATIONARY SOURCE AND COMPLIANCE DIVISION	APP. NUMBER	545264
<i>Large Coating, Printing and Chemical Operations Team</i>	PROCESSED BY	SMP
APPLICATION PROCESSING AND CALCULATIONS	REVIEWED BY	
	DATE	3/1/13

**PERMIT TO OPERATE EVALUATION
(ROLLERCOATER, AND AFTERBURNER)**

Applicant's Name	ARLON ELECTRONICS SUBSTRATES DIVISION
Company I.D.	046646
Mailing Address	9433 HYSSOP DR., RANCHO CUCAMONGA, CA 91730
Equipment Address	SAME AS ABOVE

EQUIPMENT DESCRIPTION

Application No. 545264 Modification of P/O F63382, A/N 393145)

MODIFICATION OF COATING LINE UNDER P/O F63382 (A/N 393145) CONSISTING OF FOLLOWING OVEN:

OVEN WITH FOUR HEATING ZONES, EACH 5'-10" W. X 4'-0" L. X 12'-0" H. WITH FOUR 500,000 BTU/HR DIRECT FIRED NATURAL GAS BURENRS, FOUR 2 H. P. PROCESS FANS, FOUR 7.5 H. P. CIRCULATION FANS, AND FOUR 0.33 H. P. COMBUSTION FANS.

BY THE REPLACEMENT OF:

THE FOUR 500,000 BTU/HR DIRECT FIRED NATURAL GAS BURENRS.

BY THE ADDITION OF:

THREE 500,000 BTU/HR MAXON OVENPAK LE LOW NOX NATURAL GAS-FIRED BURNERS AND 10 EACH 3435 WATT ELECTRICAL INFRARED HEATERS.

WITH FOLLOWING EQUIPMENT DESCRIPTION:

FIBERGLASS CLOTH IMPREGNATING SYSTEM NO.2, CONSISTING OF:

1. FABRIC UNWIND STAND WITH ONE 1 H.P. WEB GUIDE.
2. SPLICER, WITH TWO 1,000 WATTS HEATING ELEMENTS.
3. FABRIC ACCUMULATOR WITH ONE 1 H.P. DRIVE
4. ROLLER COATER, IMPREGNATION SYSTEM.
5. ONE 30-GALLON RESIN TANK, AND A PNEUMATIC LIFT.

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6. ONE 90-GALLON RESIN SUMP TANK.
7. OVEN WITH FOUR HEATING ZONES, EACH 5'-10" W. X 4'-0" L. X 12'-0" H. THREE ZONES WITH 1 EACH 0.5 MMBTU/HR OVENPAK LE BURNERS AND ONE ZONE WITH 10 EACH 3435 WATT ELECTRICAL INFRARED HEATERS, FOUR 2 H. P. PROCESS FANS, FOUR 7.5 H. P. CIRCULATION FANS, AND FOUR 0.33 H. P. COMBUSTION FANS.
8. CHILL ROLLERS WITH A 1 H. P. DRIVE.
9. REWIND SECTION WITH TWO 1 H. P. DRIVES.

Application No. 545265

TITLE V RIVISION

HISTORY

The above applications were submitted for a permit to modify an existing oven in the previously permitted coating line. The oven is equipped with four 500,000 BTU/HR burners, with 100 PPMV NO_x at 3% O₂. The applicant is proposing to modify the oven by replacing the burners with three 500,000 BTU/HR low NO_x burners, with 30 PPMV NO_x at 3% O₂. Initially the applicant requested to replace the burners with three 1,350,000 BTU/HR low NO_x burners. Now there will be reduction in the NO_x emissions and is expected to comply with the Rule 1147 requirements of 30 ppmv NO_x. The oven is used to cure fiberglass resin coating.

Arlon Adhesive System manufactures pre-preg (resin impregnated fabrics) for the circuit board laminate industries at this location. The manufacturing involves resin and solvent mixing, resin impregnating, and assembling of the copper foils and pre-pregs into boards under the pressure. District Rules 1128 and 1171 apply to this facility. The company currently operates a number of active permitted equipment under the District I. D. # 46646, such as coating lines, afterburner units, boilers, and blending equipment. A facility-wide VOC emission limit of 311 pounds per day has been established for this facility. The applicant has requested no VOC emission increases from the coating operation.

The District database shows that this company has not received any odor nuisance complaints from the public in last two years. There were no records of any notices of violation or notices to comply issued against the facility in the last two years.

The facility is located within an industrial area. It is not located within 1000 feet from any school and there will not be any emission increases exceeding the threshold levels under this project. Hence, this application will not require a public notification per Rule 212.

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Arlon Materials is a Title V facility. A Title V renewal permit was issued to this facility on 6/18/2011. This is the second permit revision of the Title V renewal permit under this project. The proposed permit revision is considered as a “de-minimus permit revision” to the renewed Title V permit, as described in Regulation XXX evaluation.

PROCESS DESCRIPTION

The company impregnates resin on the fabric on dip-coater lines, which are currently vented to two emission control devices. The web-fed fabric travels through the dip-tank, containing various resin-and solvent mixtures. The coated material goes through gas-fired oven to dry and gets rewound at the other end. The resin impregnated fabric is used as a laminate between the copper foils to make the circuit boards. The presses used for this purposes use steam from the boilers to heat the products. The applicant mixes resin mixture on site. Different resins and solvents are used for these purposes. All these mixing tanks are covered and vented to the afterburner. Resins and solvents are pumped into the vat via pipes from 55 gallon drums. The coating equipment and the mixing tanks are cleaned out with different solvents and acetone. However, during the clean-up operations emissions are vented to the afterburner.

The No. 2 coating line is located in an enclosure and provides 100% collection of VOC emissions due to its total permanent enclosure status and the emissions are vented to a RTO unit with 98.6% destruction efficiency (latest source test results). The coatings applied in this process and the clean-up solvents used complies with Rule 1128 and 1171 with adequate control device efficiency.

OPERATING HOURS

24 hours/day, 7 day/week, 52 weeks/year (average/maximum)

DISCUSSION

The applicant has already operated this equipment at this location for a number of years using same resin materials and has not received any notices of violation from the District. Thus, this equipment is capable of meeting all the requirements of various rules and regulations.

This oven is equipped with a total burner capacity of 2,000,000 BTU/HR. The modified oven will have low NOx burners with 1,500,000 BTU/HR total heat input. This will reduce the NOx emissions under this project, however there will be a slight increase in the other combustion contaminants since the burners have higher Btu ratings. Also, the modified oven will comply with the current BACT for NOx and the Rule 1147 requirements.

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545264

Oven (Proposed)

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	<u>maximum</u>	<u>normal</u>		
<u>hr/dy</u>	24	8	<u>max heat input</u>	1.50E+06 (BTU/hr)
<u>dy/wk</u>	7	5	<u>gross heating value</u>	1050 (BTU/scf)
<u>wk/yr</u>	52	52		
<u>load</u>	100%	100%		

	<u>Emission</u>	MAX	AVE	MAX	30-DAY	MAX	MAX
	<u>Factors</u>	(lb/hr)	(lb/hr)	(lb/dy)	(lb/dy)	(lb/yr)	(ton/yr)
SO ₂ (R1)	0.83	0.001	0.001	0.028	NA	10	0.005
SO ₂ (R2)	0.83	0.001	0.001	0.028	0.028	10	0.005
NO ₂ (R1)	38.94	0.056	0.056	1.335	NA	486	0.243
NO ₂ (R2)	38.94	0.056	0.056	1.335	1.335	486	0.243
CO (R1)	59.25	0.085	0.085	2.031	NA	739	0.370
CO (R2)	59.25	0.085	0.085	2.031	2.031	739	0.370
TOC (R1=R2)	7	0.010	0.010	0.240	NA	87	0.044
N ₂ O (R1=R2)	2.2	0.003	0.003	0.075	0.075	27	0.014
PM, PM ₁₀ (R1=R2)	7.5	0.011	0.011	0.257	0.257	94	0.047
Hexane	0.0063	9.0E-06	9.0E-06	2.2E-04	NA	7.86E-2	3.93E-5
Ammonia	3.2	4.6E-03	4.6E-03	1.1E-01	NA	3.99E+1	2.00E-2
ethyl benzene	0.0095	1.4E-05	1.4E-05	3.3E-04	NA	1.19E-1	5.93E-5
acetaldehyde	0.0043	6.1E-06	6.1E-06	1.5E-04	NA	5.37E-2	2.68E-5
acrolein	0.0027	3.9E-06	3.9E-06	9.3E-05	NA	3.37E-2	1.68E-5
benzene	0.008	1.1E-05	1.1E-05	2.7E-04	NA	9.98E-2	4.99E-5
formaldehyde	0.017	2.4E-05	2.4E-05	5.8E-04	NA	2.12E-1	1.06E-4
naphthalene	0.0003	4.3E-07	4.3E-07	1.0E-05	NA	3.74E-3	1.87E-6
PAH's	0.0001	1.4E-07	1.4E-07	3.4E-06	NA	1.25E-3	6.24E-7
toluene	0.0366	5.2E-05	5.2E-05	1.3E-03	NA	4.57E-1	2.28E-4
xylene	0.0272	3.9E-05	3.9E-05	9.3E-04	NA	3.39E-1	1.70E-4

NO ₂ @ 3% excess O ₂ ----->>	30.00	(ppmv)	SO ₂ @ 3% excess O ₂ ----->>	0.46	(ppmv)
CO @ 3% excess O ₂ ----->>	74.98	(ppmv)	PM @ 12% CO ₂ ----->>	5.5E-09	(grain/ft ³)

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393145 Oven (Pre-Modification)

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	<u>maximum</u>	<u>normal</u>		
<u>hr/dy</u>	24	8	<u>max heat input</u>	2.00E+06 (BTU/hr)
<u>dy/wk</u>	7	5	<u>gross heating value</u>	1050 (BTU/scf)
<u>wk/yr</u>	52	52		
<u>load</u>	100%	100%		

	<u>Emission</u>	MAX	AVE	MAX	30-DAY	MAX	MAX
	<u>Factors</u>	(lb/hr)	(lb/hr)	(lb/dy)	(lb/dy)	(lb/yr)	(ton/yr)
SO ₂ (R1)	0.83	0.002	0.002	0.038	NA	14	0.007
SO ₂ (R2)	0.83	0.002	0.002	0.038	0.038	14	0.007
NO ₂ (R1)	130	0.248	0.248	5.943	NA	2,163	1.082
NO ₂ (R2)	130	0.248	0.248	5.943	5.943	2,163	1.082
CO (R1)	35	0.067	0.067	1.600	NA	582	0.291
CO (R2)	35	0.067	0.067	1.600	1.600	582	0.291
TOC (R1=R2)	7	0.013	0.013	0.320	NA	116	0.058
N ₂ O (R1=R2)	2.2	0.004	0.004	0.101	0.101	37	0.018
PM, PM ₁₀ (R1=R2)	7.5	0.014	0.014	0.343	0.343	125	0.062
Hexane	0.0063	1.2E-05	1.2E-05	2.9E-04	NA	1.05E-1	5.24E-5
Ammonia	3.2	6.1E-03	6.1E-03	1.5E-01	NA	5.32E+1	2.66E-2
ethyl benzene	0.0095	1.8E-05	1.8E-05	4.3E-04	NA	1.58E-1	7.90E-5
acetaldehyde	0.0043	8.2E-06	8.2E-06	2.0E-04	NA	7.16E-2	3.58E-5
acrolein	0.0027	5.1E-06	5.1E-06	1.2E-04	NA	4.49E-2	2.25E-5
benzene	0.008	1.5E-05	1.5E-05	3.7E-04	NA	1.33E-1	6.66E-5
formaldehyde	0.017	3.2E-05	3.2E-05	7.8E-04	NA	2.83E-1	1.41E-4
naphthalene	0.0003	5.7E-07	5.7E-07	1.4E-05	NA	4.99E-3	2.50E-6
PAH's	0.0001	1.9E-07	1.9E-07	4.6E-06	NA	1.66E-3	8.32E-7
toluene	0.0366	7.0E-05	7.0E-05	1.7E-03	NA	6.09E-1	3.05E-4
xylene	0.0272	5.2E-05	5.2E-05	1.2E-03	NA	4.53E-1	2.26E-4

NO ₂ @ 3% excess O ₂ ----->>	100.16	(ppmv)	SO ₂ @ 3% excess O ₂ ----->>	0.46	(ppmv)
CO @ 3% excess O ₂ ----->>	44.29	(ppmv)	PM @ 12% CO ₂ ----->>	5.5E-09	(grain/ft ³)

Ver. 1.3

The following table shows the emission changes due to this project.

	ROG		NOx		SOx		CO		PM10	
	Lb/hr	Lb/day	Lb/hr	Lb/day	Lb/hr	Lb/day	Lb/hr	Lb/day	Lb/hr	Lb/day
Before modification	0.013	0.32	0.248	5.943	0.002	0.038	0.248	1.600	0.014	0.343
After modification	0.010	0.240	0.056	1.335	0.001	0.028	0.085	2.031	0.011	0.257
Change		-0.08		-4.608		-0.010		+0.431		-0.086

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A source test will be required to evaluate the NO_x emission rate of the modified oven to show compliance with the Rule 1147 requirements.

There will be reduction in the toxic emissions as the natural gas combustion under this project will have a reduction of 500,000 BTU/HR, which will comply with the Rule 1401 requirements.

RULES/REGULATION EVALUATION

▣RULE 212, PUBLIC NOTIFICATION

√SECTION 212(c)(1):

This section requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. This source is not located within 1,000 feet from the outer boundary of a school. Therefore, public notice will not be required by this section.

√ SECTION 212(c)(2):

This section requires a public notice for all new or modified facilities which have on-site emission increases exceeding any of the daily maximums as specified in subdivision (g). As shown in the following table, the emission increases exceeding any of the daily maximum specified by Rule 219(g). Therefore, this application will not be subject to this section.

LB/DAY	CO	NOX	PM₁₀	ROG	Lead	SOX
MAX. LIMIT	220	40	30	30	3	60
INCREASES	0.4	-4.62	-0.086	-0.08	0	-0.1

√ SECTION 212(c)(3):

As discussed in the evaluation report there will be reduction in the toxic emission increases from this project. Therefore, this application will not require public notice by this section.

√ SECTION 212(g):

This section requires a public notice for all new or modified sources which undergo construction or modifications resulting an emissions increase exceeding any of the daily maximum specified in the table below. Therefore, public notice will not be required by this section.

LB/DAY	CO	NOX	PM₁₀	ROG	Lead	SOX
MAX. LIMIT	220	40	30	30	3	60
INCREASES	0.4	-4.62	-0.086	-0.08	0	-0.1

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▣ **RULES 401 & 402, VISIBLE EMISSIONS & NUISANCE**

This equipment is expected to comply with these rule requirements. The District database has no records of any visible emissions or nuisance complaints against this equipment.

▣ **RULES 404 & 405, PARTICULATE MATTER CONCENTRATION & WEIGHT**

Compliance with these provisions is expected with proper operation and maintenance of the equipment.

▣ **RULE 1128 PAPER, FABRIC, AND FILM COATING OPERATIONS**

▼ **SECTION (c)(2) & (c)(5), VOC CONTENT OF COATINGS**

The usage of an approved control device with at least 90% collection and 95% destruction efficiencies will provide compliance with these provisions.

▼ **SECTION (c)(6), TRANSFER EFFICIENCY**

Dip-coating method comply with the rule requirements.

▣ **RULE 1147, NOX REDUCTIONS FROM MISCELLANEOUS SOURCES**

This rule requires gas fired combustion sources, in this case ovens, to emit no more than 30 ppmv of NOx at 3% O₂. The emissions of NOx from these new burners are expected to be less than 30 ppmv. Thus, this equipment is expected to comply with this requirement. A source test will be required to demonstrate compliance.

▣ **RULE 1171, SOLVENT CLEANING OPERATIONS**

The usage of an approved control device with at least 90% collection and 95% destruction efficiencies will provide compliance with these provisions.

REGULATION XIII

▣ **RULE 1303(a), BEST AVAILABLE CONTROL TECHNOLOGY (BACT)**

The burner is guaranteed to emit less than 30 ppmv NO_x at 3% O₂ which is BACT for ovens. A source test will be conducted to verify compliance. There is an increase in CO less than 1 lb/day since the new burners are less in numbers than the existing burners. However, the new burners CO concentration is higher than the default CO factor for natural gas combustion from ovens. Thus, the emission increase of PM10, CO, ROG and SOx are well below 1 lb/day, so BACT is not triggered for these pollutants.

▣ **RULE 1303(b)(1), MODELING**

Modeling is not required since PM10, NOx and CO emission changes are below the Table A-1 allowable emissions.

NOx (lbs/hr)		PM10 (lbs/hr)		CO (lbs/hr)	
Allowed	Actual	Allowed	Actual	Allowed	Actual
1.26	-4.608	7.6	-0.086	69.3	+0.431

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▣ **RULE 1303 (b)(2), EMISSION OFFSETS**

There are no VOC emission increases under this project from the coating operation. No emission offsets are required for <0.5 lb/day emission increases for other criteria pollutants (ROG and PM10) from the natural gas combustion. No CO offsets will be required for this project as the District has attained the national and state standards.

▣ **RULE 1401, NEW SOURCE REVIEW OF CARCINOGENIC/TOXIC AIR CONTAMINANTS**

As discussed in the evaluation report there will be reduction in the toxic emissions from this project. Therefore, this project is expected to comply with these requirements.

REGULATION XXX

The proposed project is considered as a “de minimis significant permit revision” to the renewed Title V permit issued to this facility on 18 June 2011. Rule 3000(b)(6) defines a “de minimis significant permit revision” as any Title V permit revision where the cumulative emission increases on non-RECLAIM pollutants or hazardous air pollutants (HAP) from these permit revisions during the term of the permit are not greater than any of the following emission threshold levels:

Air Contaminant	Daily Maximum (lbs/day)
HAP	30
VOC	30
NO _x	40
PM10	30
SO _x	60
CO	220

Rule 3003(j) specifies that a proposed permit for the initial Title V permit shall be submitted to EPA for review. To determine if a project qualifies for a “de minimis significant permit revision”, emission increases resulting from all permit revisions that are made after the submittal of proposed permit to EPA shall be accumulated and compared to the above threshold levels. This is the second permit revision to the renewed Title V Permit. The cumulative emission increases resulting from this proposed permit revision are summarized as follows:

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Revision	HAP	VOC	NO_x	PM₁₀	SO_x	CO
1 st Revision Modification of boilers (A/N 530199, 530200)	0	0	0	0	0	0
Current 2 nd Permit Revision, Replacement of burners on coating line (A/N 545264)	0	0	0	0	0	0
Cumulative Totals	0	0	0	0	0	0
Maximum Daily	30	30	40	30	60	220

Since NO_x is a RECLAIM pollutant for this facility, an analysis must be made to ensure that the proposed permit revision is not considered a “significant permit revision” even though the cumulative increase in NO_x emissions is less than the threshold level of 40 lbs/day. Rule 3000(b)(28)(D) defines a “significant permit revision” as any modification at a RECLAIM facility that results in an emission increase of RECLAIM pollutants over the facility’s starting Allocation plus the non-tradeable Allocations. There are no NO_x emission increases from this project. As a result, the proposed permit revision is not considered as a “significant permit revision”.

CONCLUSIONS/RECOMMENDATIONS

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “de minimis significant permit revision”, it is exempt from the public participation requirements under Rule 3006 (b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j) in conjunction with the Rule 212 public notice. If EPA does not raise any objections within the review period and upon completion of the Rule 212 public notice period, a revised Title V permit will be issued to this facility.